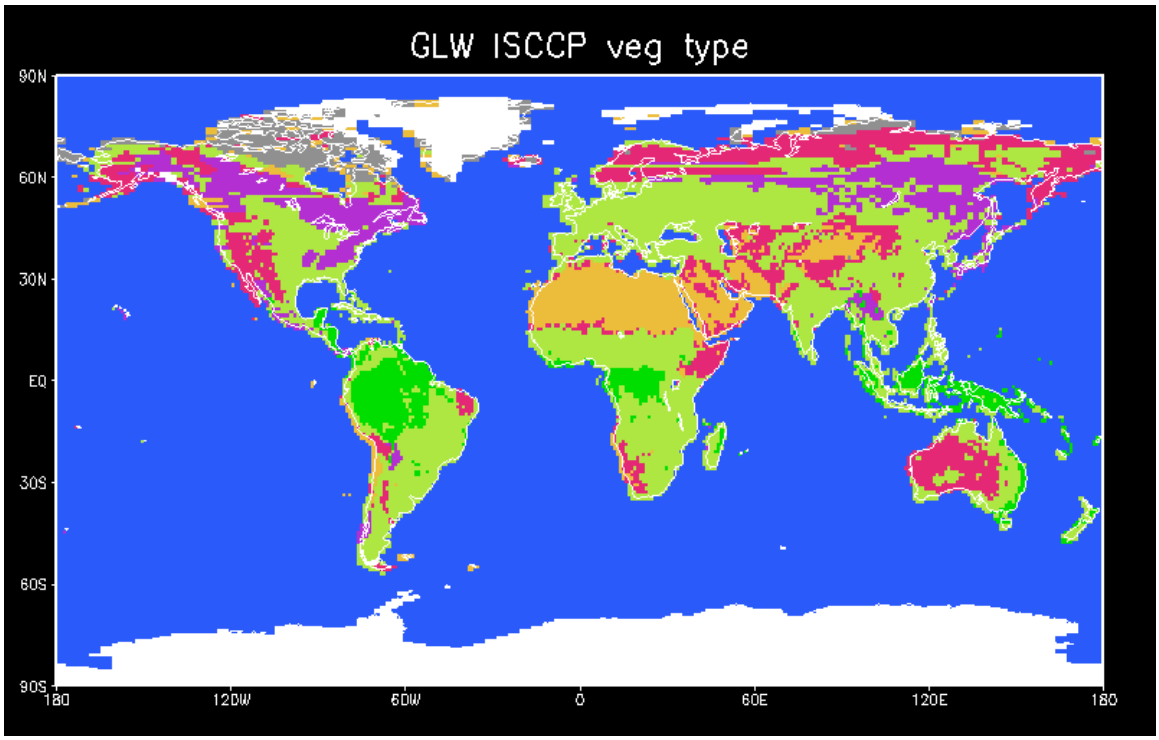
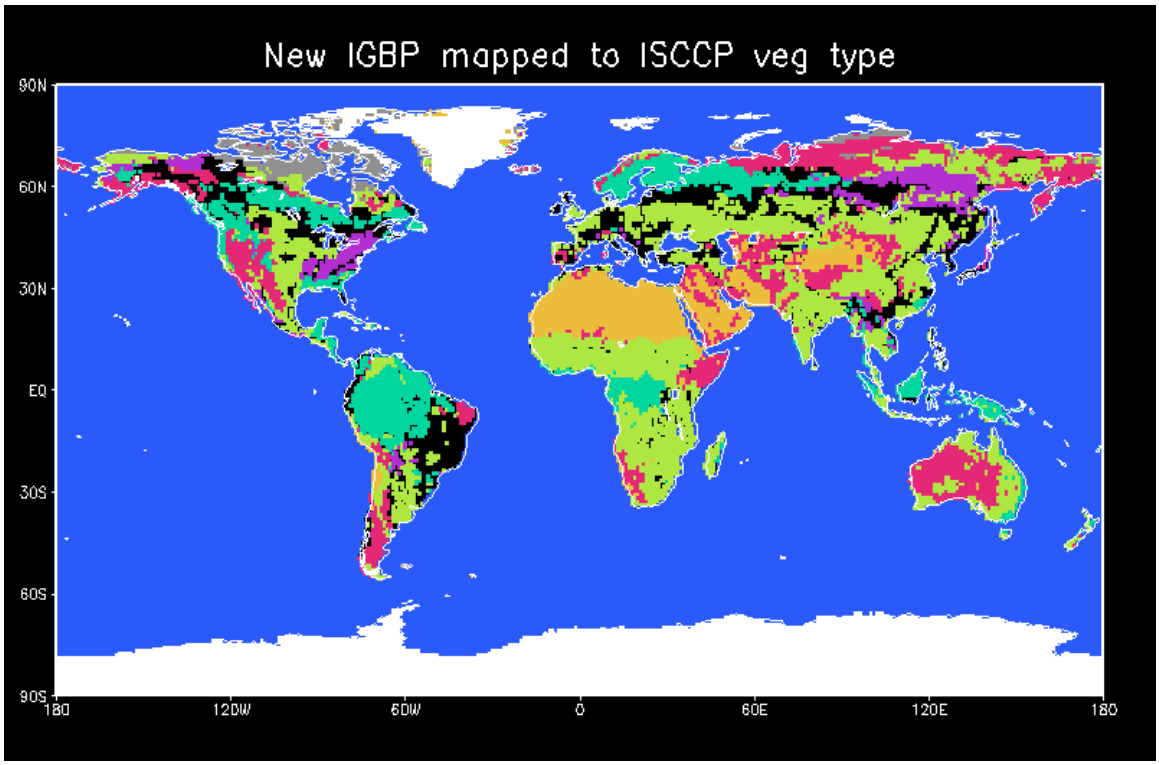


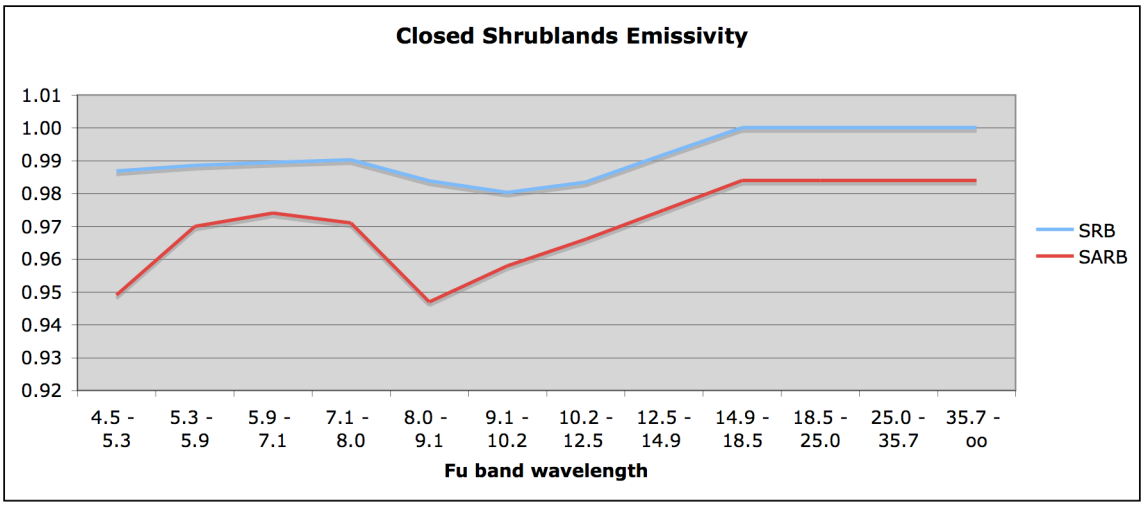


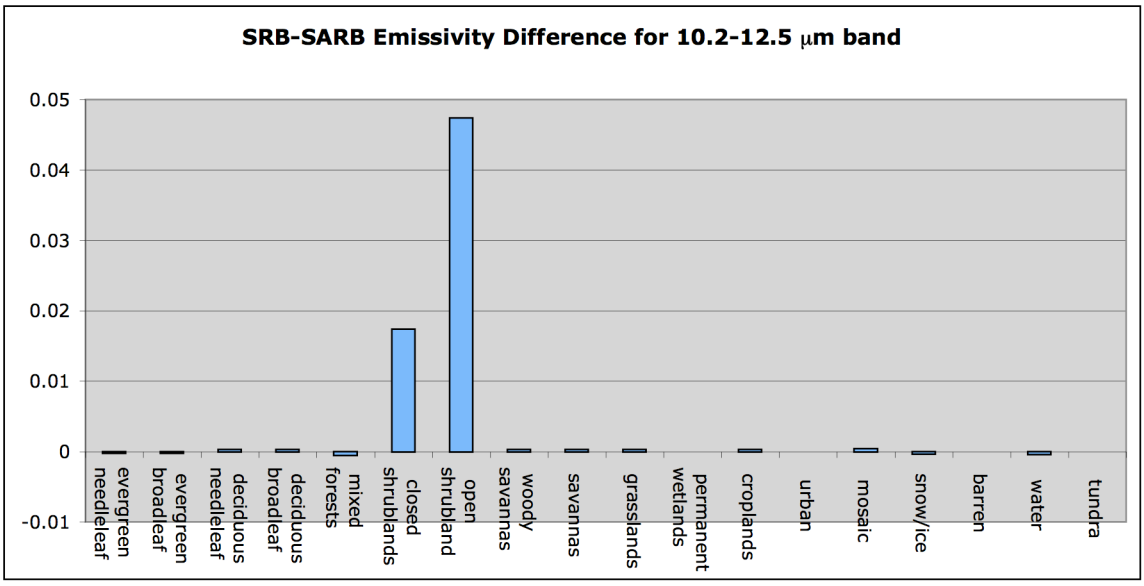
I have access to new 1x1 IGPB scene types from Nitchie/Dave. We could use all emissivities from IGBP table, instead of just 9 ISCCP vegetation types. Or we can use the updated IGBP types to convert to the 9 scene types currently in use. Notice from maps that this will change the scene type of northern Europe, some of Canada and will

clean up coastlines in tundra regions and get rid of spurious lines. The missing data areas are IGBP types that aren't spelled out exactly as conversions in the GLW code. These are mixed forests, permanent wetlands, urban and mosaic. Will using the new scene types (either as 18 or 9) work ok with the ISCCP data we get in?

In a J. Appl Met. article by Louis Garand (2003), he expects accuracies to be about 0.01 for emissivities greater than 0.97, but a much lower accuracy (0.10) for those near 0.85. The emissivity at 11 μm for barren surfaces is 0.92, so we should expect a lower accuracy over the desert. Garand also goes on to say that for GOES retrievals, errors are 0.5-1.0K over ocean and 0.9-2.4K over land for skin temperatures.

Emissivities are slightly different between SRB and the SARB group. They also added 2 new type lines (fresh snow and sea ice). The largest differences are in the shrubland emissivities, of which we use the closed shrubland emissivities. The SARB values agree with the technical report by Anne Wilber, Dave Kratz & Shashi Gupta. Unfortunately, this will increase skin temperature if changed.

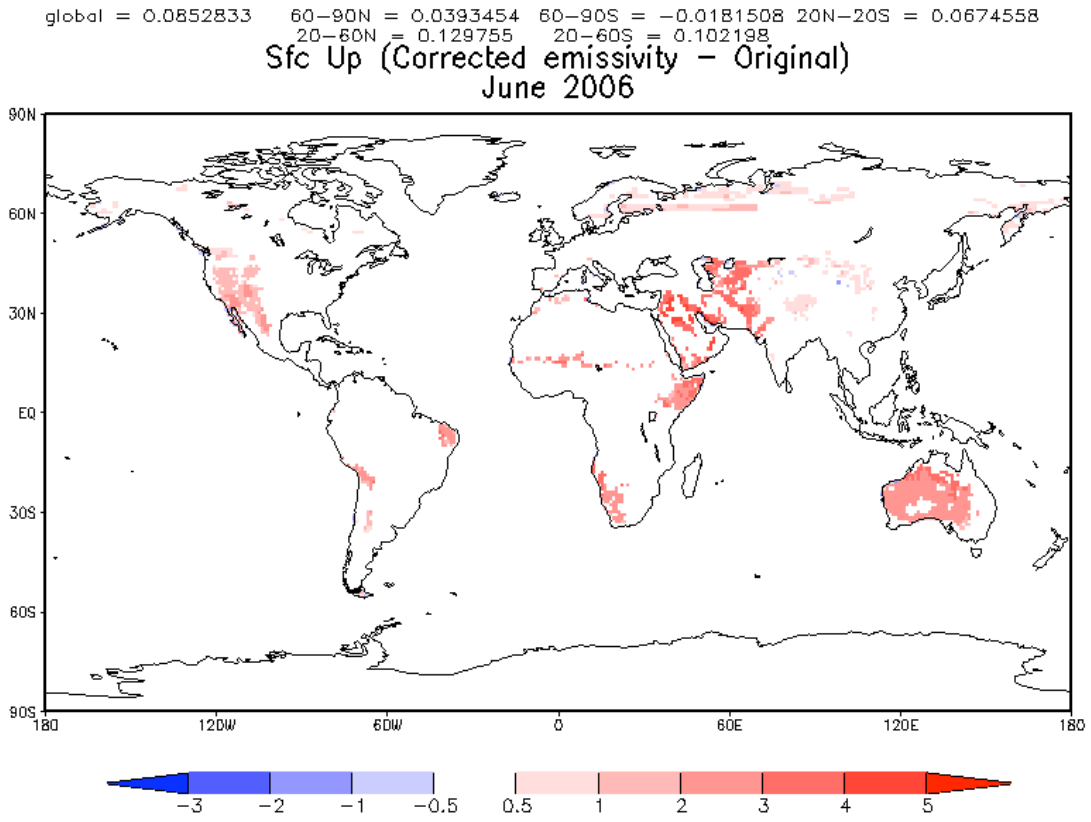


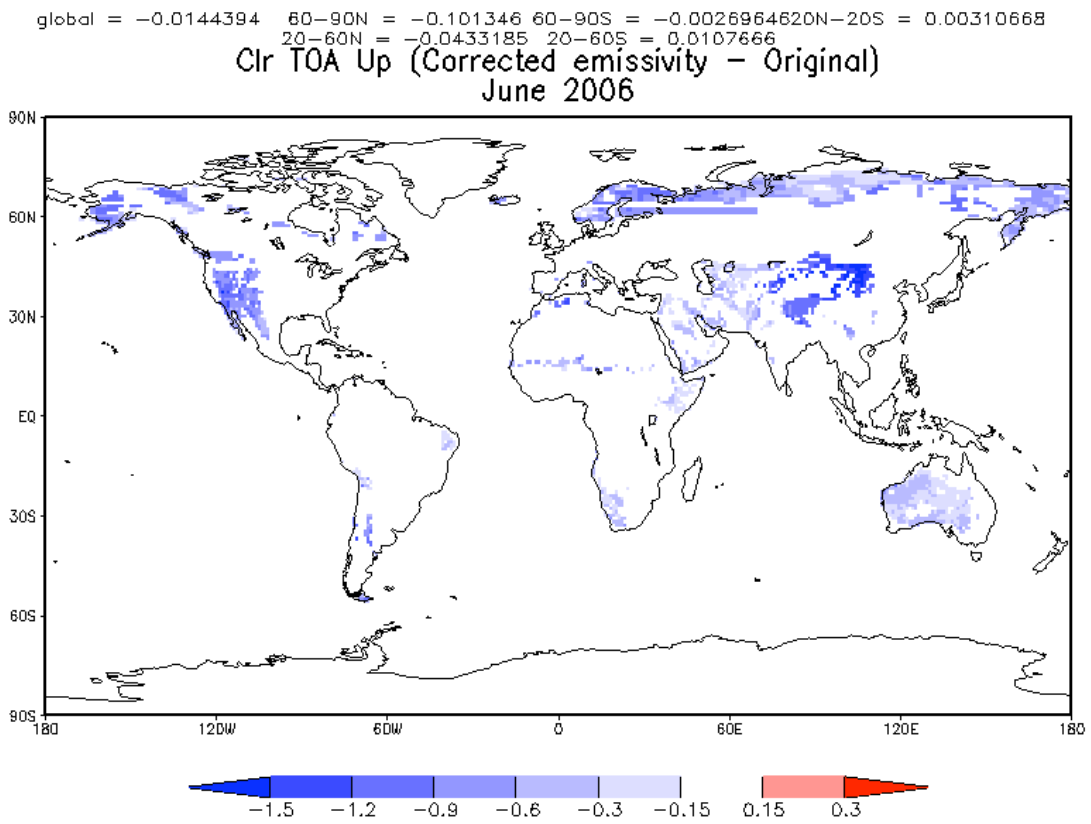


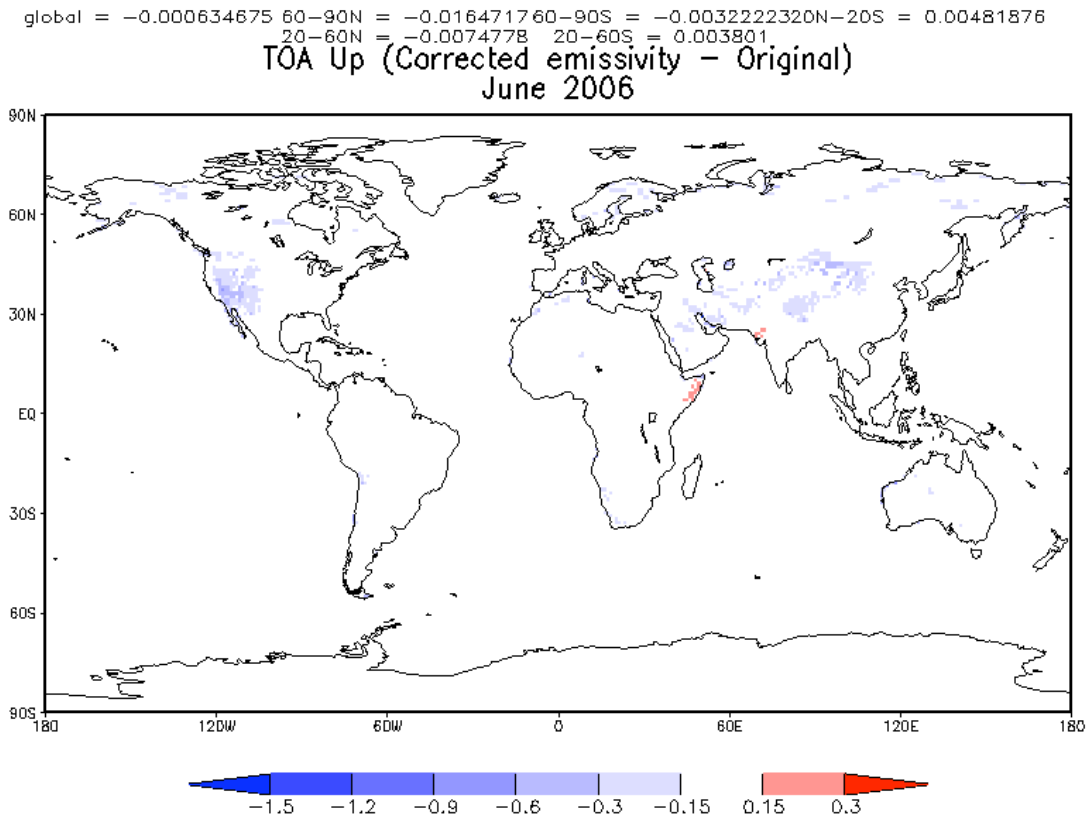
Updated

I ran two test cases for June 2006. In the first, I still used the old surface type maps (with 9 types), but used the emissivities used by SARB. In the second case, I used the emissivities from SARB and the new IGBP map created by Nitchie/Dave. I used all of the IGBP categories, not just the ISCCP surface types.

The monthly averaged flux differences for the first case are:



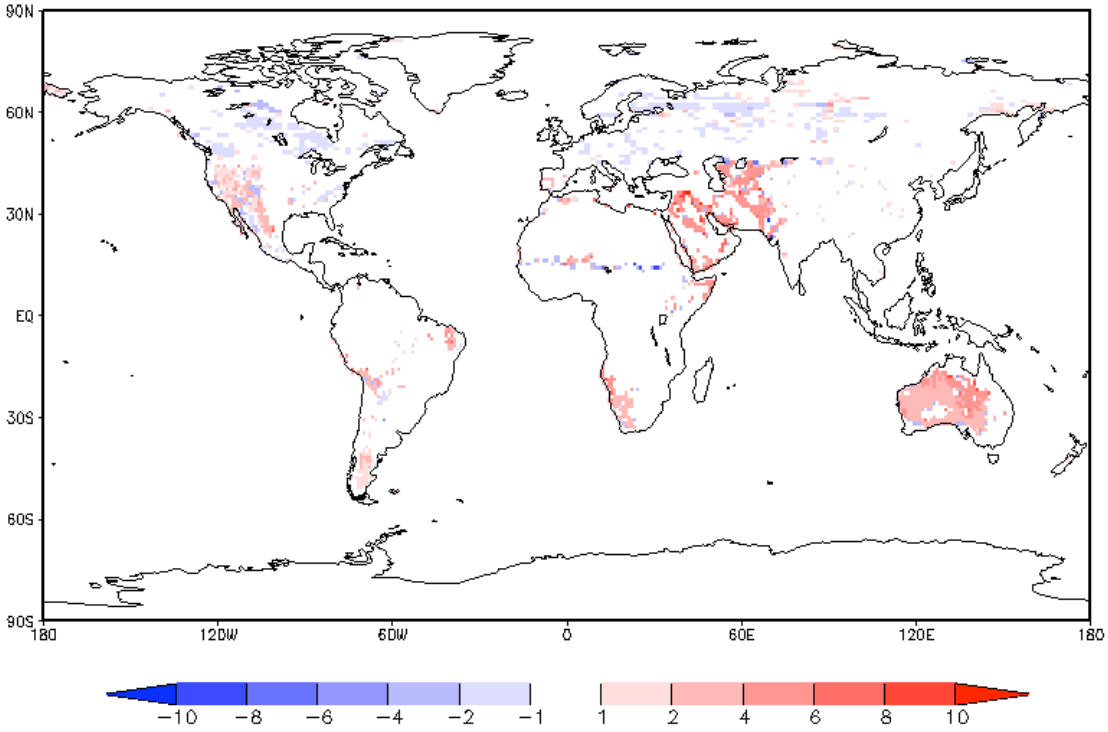




The monthly average differences for the second case are:

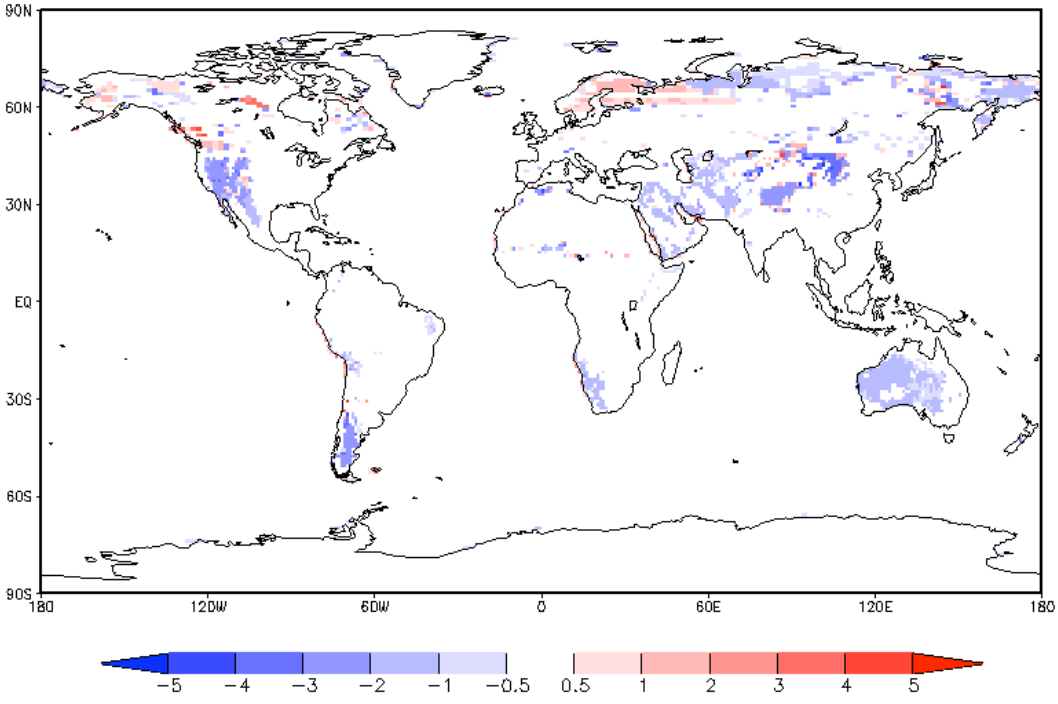
global = 0.0833911 60–90N = −0.0207587 60–90S = −0.0012152 20N–20S = 0.0620524
20–60N = 0.120297 20–60S = 0.122526

Sfc Up (New IGBP type − Old w/ correct emissivity)
June 2006



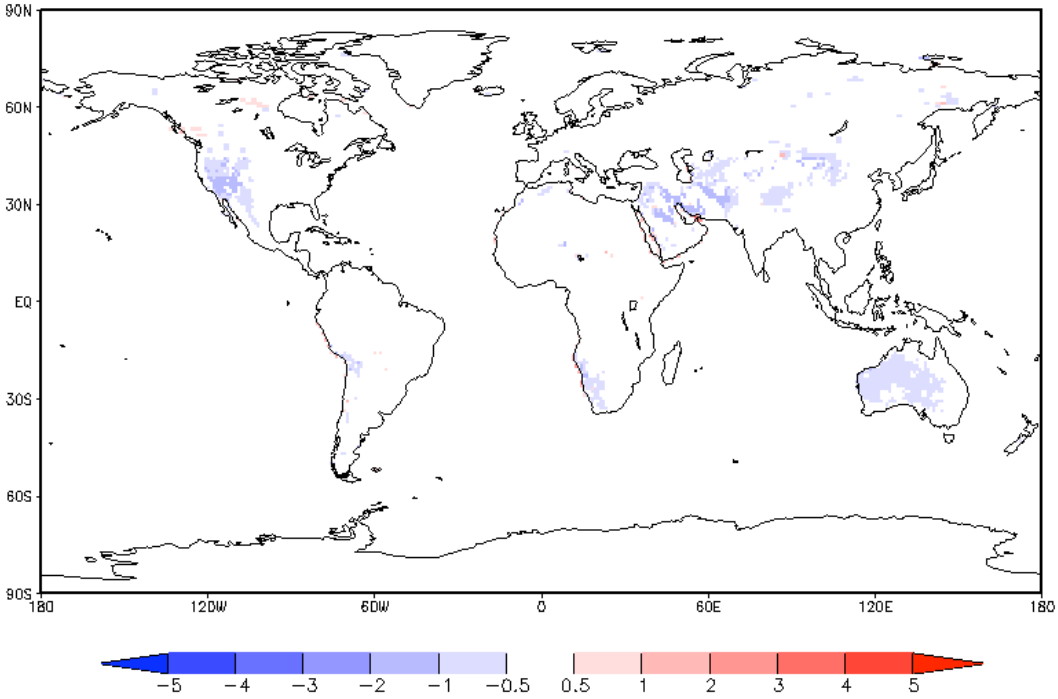
global = −0.0350775 60–90N = −0.0397964 60–90S = −0.00511995 20N–20S = −0.00178451
20–60N = −0.077167 20–60S = −0.0428694

Clr TOA Up (New IGBP type − Old w/ correct emissivity)
June 2006

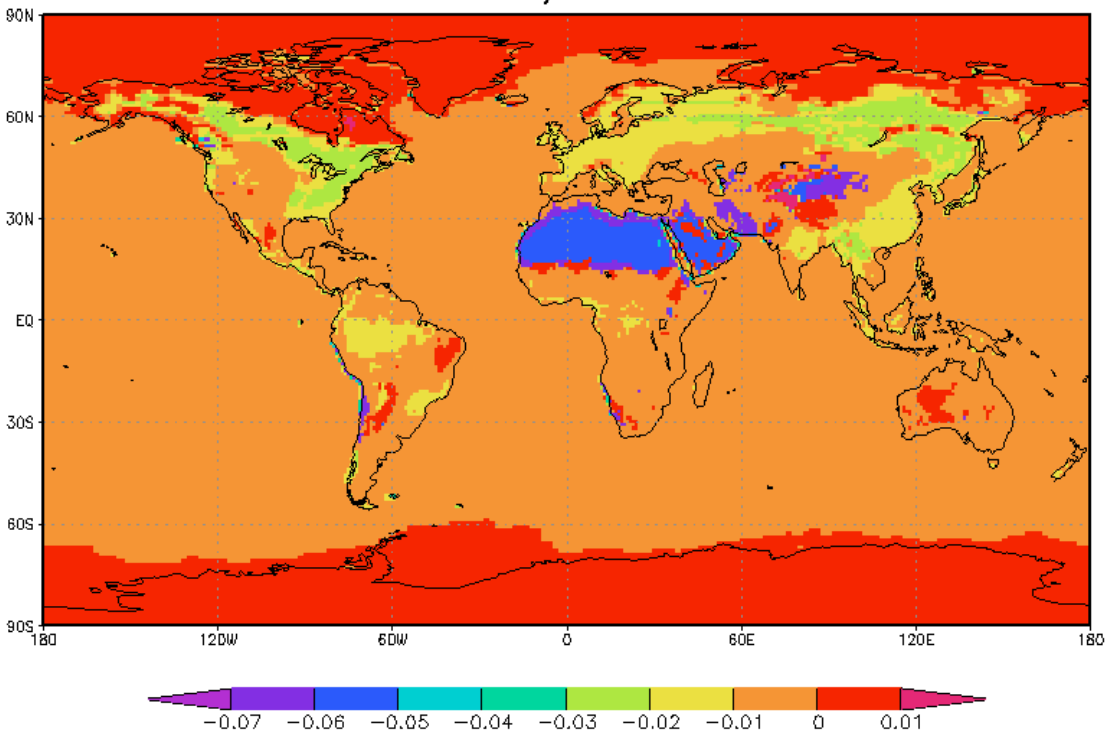


global = −0.0148715 60−90N = −0.0161524 60−90S = −0.001373520N−20S = 0.000990421
20−60N = −0.0334182 20−60S = −0.0201408

TOA Up (New IGBP type − Old w/ correct emissivity)
June 2006

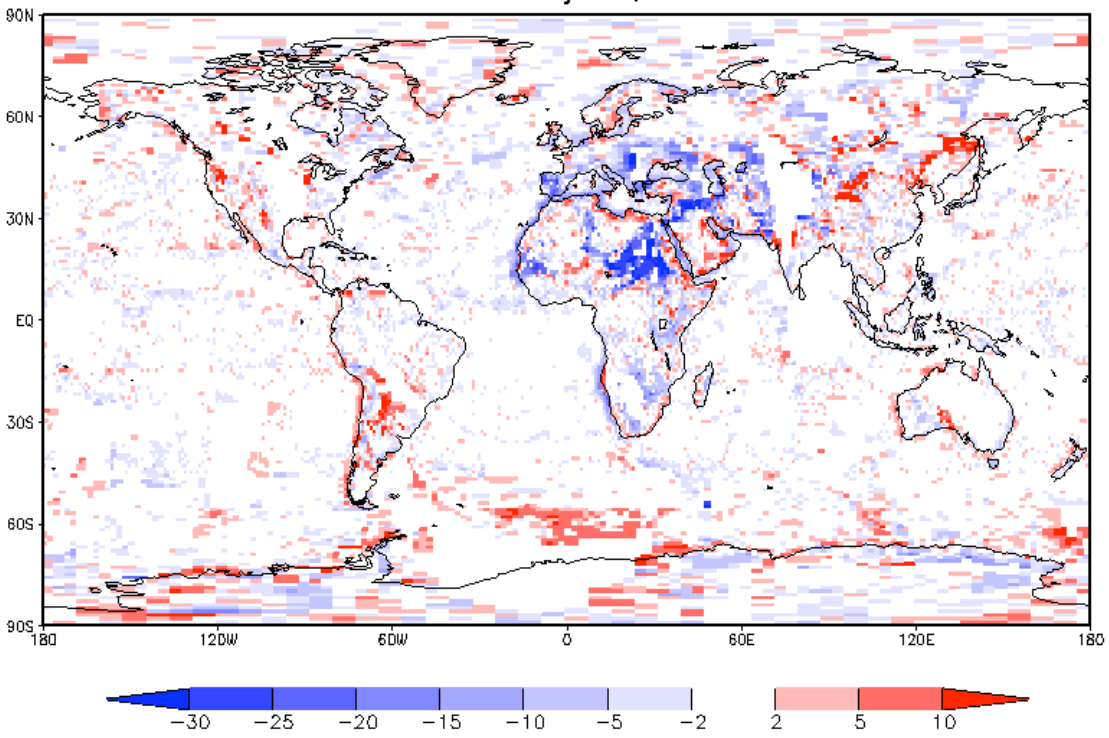


GLW sfc emissivity − D1 NB IR emissivity
May1992

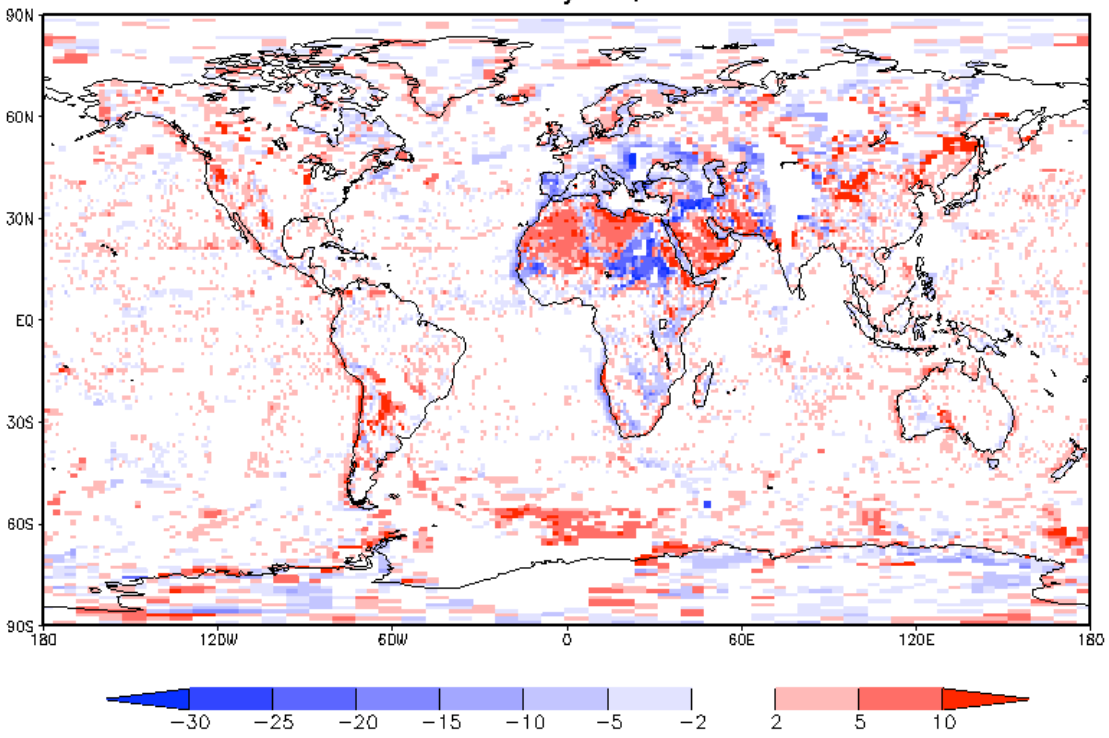


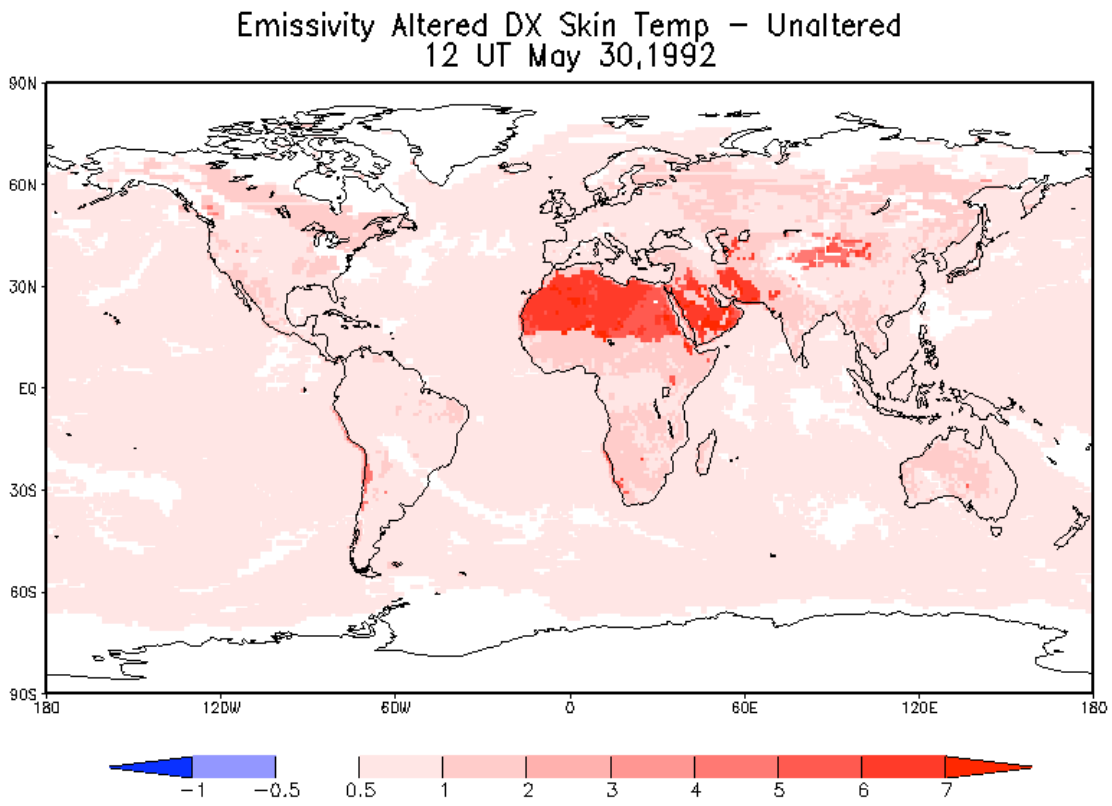
I found extra D1 files on the ISCCP web site with the emissivity values used. This doesn't have the prettiest plot colors, but it is just a map I produced while looking at different things.

Unaltered DX Skin Temp – D1 TSCLR
12 UT May 30,1992



Emissivity–altered DX Skin Temp – D1 TSCLR
12 UT May 30,1992





The previous are skin temperature maps of a single time period. The emissivity correction done in GLW can alter the African and Middle East skin temperatures to 7K.